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Red Arrow Products Co. LLC  
Post Office Box 1537  
633 South 20th Street  
Manitowoc, WI 54221-1537

PH: 920-683-5500  
FAX: 920-683-5524

November 16, 1998

Mr. Tom Katen  
Cooper Foods, Inc.  
6793 U.S. Rte. 127 North  
Van Wert, OH 45891

Dear Tom:

Thank you for your hospitality during my visit last week. We had quite a few projects to tackle and I felt we had very good success. The following pages are test procedures and recommendations for the atomization, collagen turkey breast, apple flavored turkey breast, and MAILLOSE and the high temperature oven.

For easy reviewal I have taken one page each to follow up on the aforementioned items. I will be in touch soon to discuss moving forward on these items. In the meantime, please do not hesitate to call with questions.

Sincerely,  
Red Arrow Products Co. LLC

Brian C. Hickman  
Territory Sales Manager

cc: Eric Ludwig

**RED ARROW**

PTO-004212

## **ATOMIZATION and SUPREME POLY**

The portable atomization unit is in reasonably good shape. Several worn o-rings and gaskets on the pressure tank were replaced, as well as several of the quick disconnects that also were showing noticeable wear. All of the quick disconnect parts should be replaced with new ones, which will help improve the flow of atomized products.

The reason the nozzle clogs up is probably due to mixing MAILLOSE and SUPREME in the lines. The SUPREME is not water soluble and will get very cloudy and could have tar formation when in contact with another water based substance. The simplest recommendation I have would be to utilize SUPREME POLY which contains polysorbate 80 to make it water soluble. I will be sending a sample to you for tests.

The SUPREME POLY will also be required should you decide to do all of your re-smoking in the high temperature oven.

Once the new oven doors are installed in the backs of the large smoke houses the atomization nozzle will need to be re-installed in a more suitable area. With the installation of a new house to west of the existing houses the nozzle will probably have to be installed from the smoke house ceiling with stainless steel tubing dropped down to properly position the nozzle in place. Then, poly-flo lines could be dropped from the ceiling and secured down the front of the house to make the connection with the portable unit simple. Another idea would be to purchase a wall mounted single panel atomization unit which, once installed, would not have to be moved or hooked up for use.

## Honey Cured Smoked Turkey - Collagen

We ran a test of this product to get a golden brown color to the product. The following is the test procedure that was run and following it is a recommendation of how to run it in the future to shorten the cycle and use less steps:

<u>TIME</u>	<u>DRY/WET BULB</u>	<u>FA/EX DAMPER</u>	<u>HUMIDITY VALVE</u>	<u>COMMENTS</u>
30 min	125/125	Closed	Auto	
20 min	150/0	Auto	Closed	Dry surface, but only 90F temp
15 min	150/110	Auto	Auto	Tacky, but only 102F temp
10 min	150/0	Auto	Closed	Tacky, about 105F
20 min	0/0	Closed	Closed	Atomization 2.75# of Supreme 3min dwell
40 min	170/112	Auto	Auto	
30 min	180/142	Auto	Auto	
120 min	180/153	Auto	Auto	
180 min	180/160	Auto	Auto	
30 min	180/164	Auto	Auto	To 160F internal
5 min	180/180	Closed	Auto	

The adjustments made during the period when the dry bulb was set at 150F were to ensure proper surface conditions prior to moving on in the processing schedule. The results were quite positive, but the following will be more simple and efficient to run:

<u>TIME</u>	<u>DRY/WET BULB</u>	<u>FA/EX DAMPER</u>	<u>HUMIDITY VALVE</u>	<u>COMMENTS</u>
?	125/125	Closed	Auto	To 102F surface temp
?	150/0	Auto	Auto	To tacky surface
20 min	0/0	Closed	Closed	Atomize 2.75# Supreme 3 minute dwell
40 min	170/112	Auto	Auto	
30 min	180/142	Auto	Auto	
120 min	180/153	Auto	Auto	
to internal	180/164	Auto	Auto	
5 min	180/180	Closed	Auto	

The time on the first two steps will be determined during the first run. However, it is important to assure certain conditions before moving to the next step in a processing schedule. This is especially true before atomization of a liquid smoke.

## **Apple Flavored Smoked Turkey**

In the high temperature oven we tested several turkey pieces and **LFB SPECIAL A w/apple**. This was an excellent application as the surface temperature did not rise high enough to flash off the apple flavor we were trying to achieve.

The first test piece was dipped in **LFB SPECIAL A w/apple** for one minute and placed in the oven for two runs of four minutes at about 250F. The first run through the top browned very nicely, but the bottom did not. On the second run the product was placed in the oven upside down to brown the bottom portion, which it did. The apple flavor was distinctive.

Another piece was then dipped again for one minute and placed onto the conveyor for 8 minutes at 300F. The color was very brown on the top, but noticeably lighter on the bottom.

The last test was done by dipping one piece for one minute and another for two minutes. Both pieces were placed in the oven at 350F for 8 minutes. Both products browned nicely even on the bottom. These were the products to be sent to the customer for evaluation. The apple aroma was very evident especially on the piece that was drenched for two minutes.

The contact time of the **LFB SPECIAL A w/apple** was sufficient to provide enough penetration into the product surface. Because the high temperature oven only raises the surface temperature to roughly 125F there is no flashing off the apple flavor. Therefore, higher temperatures and less oven time could be tested and should produce superior results.

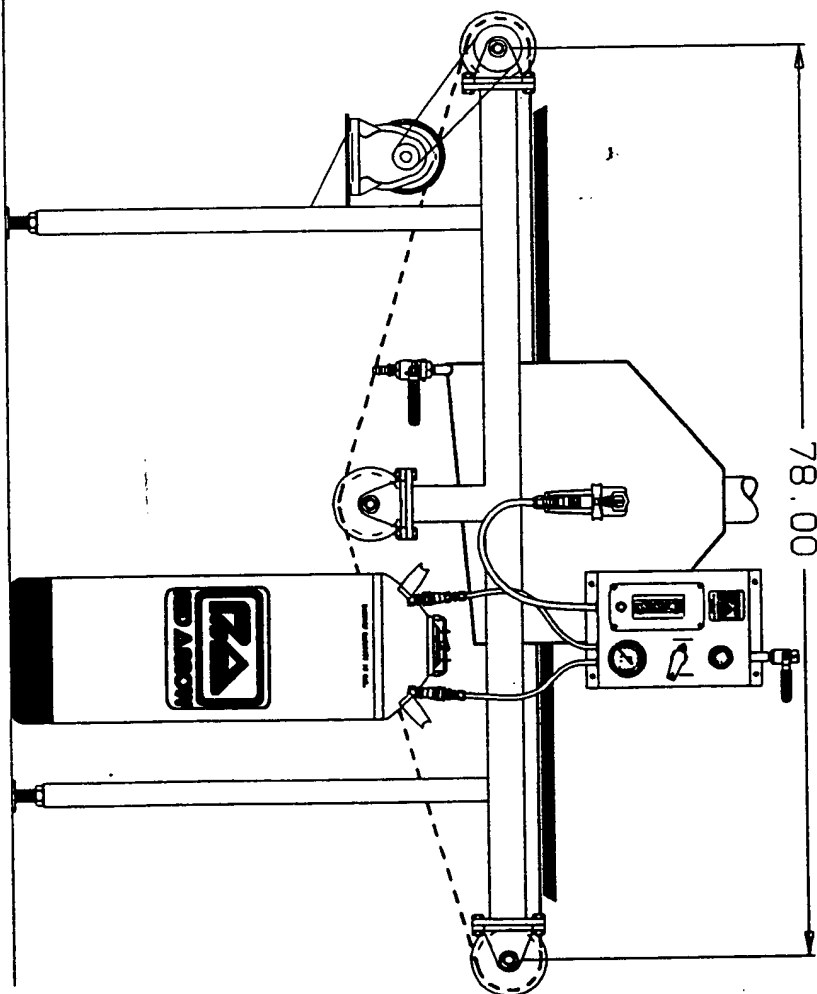
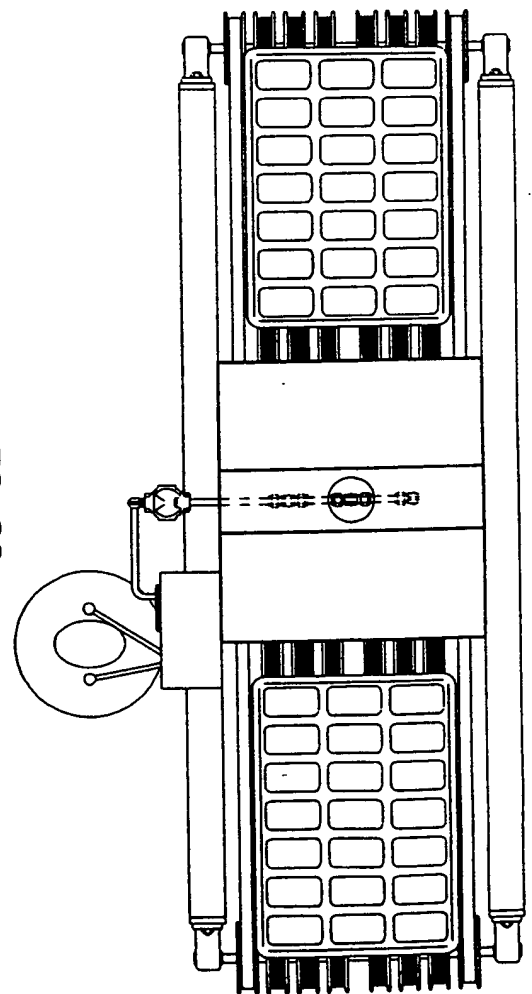
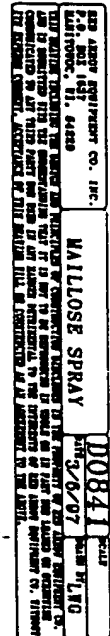
The product can be labeled "Smoked" and a qualifier could read "Apple Flavor Added" or "Apple Flavored". However, the product can not be labeled "Naturally Smoked" or "Applewood Smoked" or any combination thereof. A possible idea would be to call the product "Apple Flavored Smoked Turkey Breast".

It also must be noted that the product is not Kosher because of the type of apple flavoring we use. If this will be an issue please let me know we can try to source one that is Kosher.

## **MAILLOSE and IMPINGEMENT**

The high temperature oven that is now in place is very impressive. Following a few adjustments the products had very good color. Dipping the products in full strength **MAILLOSE** will be your best option until we can implement an application system. A low volume spray bar applicator with a protective hood is the best recommendation. We can custom design one with or without a conveyor, and to best suit your needs. A system like this would enable you to cover every piece with a consistent amount of **MAILLOSE** to ensure consistent browning throughout the re-smoking process.

When the time is right for you I would recommend getting in touch with Luke Griesbach of our equipment company to discuss specifics. His extension is x125. I have also enclosed a drawing of a spray system that would be most suitable for your needs. The length and width of the system can be varied and the conveyor speed adjusted for adequate product flow prior to heat processing.



PTO-004217

# KRETCHMAR HONEY HAM TEST @ UNITHERM

5/26/99

TEST	% PUMP	INFRA RED	OVEN TEMPS	
			ZONE - 1	ZONE - 2
1A	34%	YES	550°	600°
1B	34%	NO	550°	600°
2A	30%	YES	550°	600°
2B	30%	NO	550°	600°
3A	28%	YES	550°	600°
3B	28%	NO	550°	600°
CA	48%	YES	550°	600°
CB	48%	NO	550°	600°

TEST	% PUMP	SMOKE SHOWER	INFRA RED	OVEN TEMPS	
				ZONE - 1	ZONE - 2
1D	34%	1 MINUTE	1 MINUTE	550°	600°
1E	34%	1 MINUTE	1 MINUTE	550°	615°
2E	30%	1 MINUTE	YES	550°	615°
2E 1			1 MINUTE	550°	615°
2E 2			1 MINUTE	550°	615°
2E 3			1 MINUTE	550°	615°
2E 4			1 MINUTE	550°	615°
2E 5			1 MINUTE	550°	615°
2E 6			1 MINUTE	550°	615°
2E 7			1 MINUTE	550°	615°
2E 8			1 MINUTE	550°	615°
3E	28%	1 MINUTE	YES	550°	615°
3E 2			45 SECONDS	550°	615°
3E 3			45 SECONDS	550°	615°
3E 4			45 SECONDS	550°	615°
3E 5			45 SECONDS	550°	615°
3E 6			45 SECONDS	550°	615°
3E 7			45 SECONDS	550°	615°
3E 8			45 SECONDS	550°	615°

SHOWER SIDE UP  
SHOWER SIDE UP  
SHOWER SIDE DOWN  
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SHOWER SIDE DOWN

## NOTES

THE LIQUID SMOKE USED WAS RED ARROW 24P APPLIED @ 50% ON ALL TESTS

THE DWELL TIME IN OVEN WAS 10 MINUTES ON ALL TESTS

INFRARED GRILL TEMPERATURE IS 1200°

ALL RAPID FLOW OVENS HAVE STEAM SUPPLY AND FIRE SUPPRESSION SYSTEM

GRILL & OVEN USE 400psi BELT WASH SYSTEMS

PTO-004218



# TEST YIELDS FROM RAPID FLOW OVEN

TEST CONDUCTED ON 5/26/99 @ UNITHERM

TEST #	PUMP	LBS IN BAG	LBS OUT OF IR	LBS OUT OF OVEN	YIELD
1	34%	13.6	12.94	12.58	92.50%
1B	34%	13.39	NO IR	12.47	93.13%
2	30%	13.26	12.73	12.45	93.89%
2B	30%	13.53	NO IR	12.88	95.20%
3	28%	14.25	13.64	13.31	93.40%
3B	28%	14.01	NO IR	12.9	92.08%

OVEN TEMP            ZONE 1    550°  
                              ZONE 2    600°  
TIME IN OVEN (minutes)    10  
TIME IN IR (minutes)        1  
SMOKE SOLUTION            24P    50%

## TEST LOT 2            30% PUMP

PEELED WEIGHT	LBS AFTER IR & OVEN	YIELD	LBS AFTER BLAST CHILL	YIELD
12.975	12.555	96.76%	12.51	96.42%
12.98	12.565	96.80%	12.495	96.26%
13.125	12.7	96.76%	12.635	96.27%
12.81	12.395	96.76%	12.355	96.45%
12.85	12.45	96.89%	12.365	96.23%

OVEN TEMP            ZONE 1    550°  
                              ZONE 2    615°  
TIME IN OVEN (minutes)    10  
TIME IN IR (minutes)        1  
SMOKE SOLUTION            24P    50%

## TEST LOT 3            28% PUMP

PEELED WEIGHT	LBS AFTER IR & OVEN	YIELD	LBS AFTER BLAST CHILL	YIELD
12.93	12.465	96.40%	12.445	96.25%
13.37	12.925	96.67%	12.88	96.34%

OVEN TEMP            ZONE 1    550°  
                              ZONE 2    615°  
TIME IN OVEN (minutes)    10  
TIME IN IR (minutes)        0.75  
SMOKE SOLUTION            24P    50%

1. TIME & TEMP NECESSARY TO ACHIEVE DESIRED PRODUCT APPEARANCE

2. CLEANING PROCESS

1-1 1/2 hrs  
Alkaline

- 2.1. CIP TYPE SYSTEM
- 2.2. HOW LONG TO CLEAN SYSTEM
- 2.3. CLEANING DUCTWORK
- 2.4. RECOMMENDED CHEMICALS
- 2.5. DEGREE OF DIFFICULTY IN CLEANING CONVEYOR

2.5.1.1. ARE BRUSHES USED

3. WHAT IS NECESSARY TO PROVIDE TEMPERATURE BEYOND THAT OF SUPERHEATED STEAM

4. STEAM USAGE FOR OVEN

5. AMMONIA USAGE FOR CHILLER

6. ELECTRICAL USAGE FOR OVEN & CHILLER

7. SUGGESTED MANNING

8. DOES PRODUCT NEED TO BE PREHEATED OR SURFACE DRIED BEFORE APPLYING LIQUID SMOKE

9. WHAT IMPACT DOES CHILLER HAVE ON INTERNAL TEMPERATURES OF PRODUCT

10. BRINE CHILLING PRIOR TO OVEN  $\approx 600,000$

11. INTERNAL TEMP GOING INTO & OUT OF OVEN

12. FPM OF CHAIN THROUGH OVEN & LENGTH OF CHAIN 2 FPM

13. WILL BLAST CHILL KEEP UP WITH OVEN

14. BAG SLITTER - CAPACITY & COST

15. FOOT BATHS/BOOTWASHERS - DETAILS & COST

16. STAINLESS STEEL FLOOR DRAINS

Pieces per hour 384

Adjustable Air Flow - Is oven capable of running other products

129°-140°

Brine Chiller  $21 \times 21 \times 10$  = 400 pcs/hr

4 pcs across Belt

400' long belt x 40" wide

Send Hovey Ham to Unitherm

**KRETCHMAR HAM MANNING**  
CURRENT MANNING

DEFORM		PCS/HR	818	5/20/99
PLACE ON RACK	1	PCS/MAN/HR	102.2	
LAYUP	2	MAN/HR/100PCS	0.978	
DEFORM	2	LBS/HR	8588	
WASH FORM	2	LBS/MAN/HR	1073	
MULE	1	MAN/HR/CWT	0.093	
	8			

PEEL		PCS/HR	940.4	5/20/99
LAYUP	1	PCS/MAN/HR	168.1	
PEELERS	2	MAN/HR/100PCS	0.602	
HANG	2	LBS/HR	9874	
SCALE	0.33	LBS/MAN/HR	1745	
MULE	0.33	MAN/HR/CWT	0.057	
	5.66			

PACKAGING - WEST LINE		PCS/HR	903	5/20/99
LAYUP	1	PCS/MAN/HR	129	
BAG	1	MAN/HR/100PCS	0.775	
CRY-O-VAC	1	LBS/HR	9488	
LABEL	1	LBS/MAN/HR	1355	
MAKE/PACK BOXES	2	MAN/HR/CWT	0.074	
PALLETIZE	1			
	7			

STUFFING		PCS/HR	629	6/3/99
STUFFER	1	PCS/MAN/HR	105	
PAPER MOLD	1	MAN/HR/100PCS	0.954	
LID	1	LBS/HR	6802	
CLAMP LID	1	LBS/MAN/HR	1100	
MULE	1	MAN/HR/CWT	0.091	
COOKER	1			
	6			

SUM OF MAN/HR/100 PCS	26.66	3.309	
SUM OF MAN/HR/CWT		0.3452	

DEFORM		PCS/HR	705	6/3/99
PLACE ON RACK	1	PCS/MAN/HR	100.8	
LAYUP	1	MAN/HR/100PCS	0.992	
DEFORM	2	LBS/HR	7408	
WASH FORM	2	LBS/MAN/HR	1058	
MULE	1	MAN/HR/CWT	0.095	
	7			

AVG PIECE WEIGHT

10.5

128 PCS @ 23:42 MIN = 563.5 SECONDS  
HAMS PER MINUTE 13.6

384 PIECES IN 24.5 MINUTES

15.7 PCS/MIN

PCS	TIME (SEC)
20	63
20	79
20	83.5
20	85
20	88
100	398.5

SEC/PC 3.99  
PCS/MIN 15

PCS	TIME (SEC)		PCS/MIN	PCS/HR
25	123.61	4.94	12.13	728.10
40	193.15	4.83	12.43	745.53
65	351.93	5.41	11.08	664.90
128	797.12	6.33	9.48	569.05
256	1485.81	5.38		

SEC/PC 5.73  
PCS/MIN 10.48

PCS	TIME (SEC)		PCS/MIN	PCS/HR
42	219.7	5.23	11.47	688.09
64	444.0	5.29	11.35	681.08
128	858.8	5.21	11.51	690.64
168	874.2	5.20	11.53	691.82
42	193.5	4.61	13.02	781.44
84	417.3	4.97	12.08	724.81
128	608.4	4.83	12.43	745.58
168	873.5	5.20	11.54	692.37
840	4287.47	5.07		

SEC/PC 5.10  
PCS/MIN 11.76

PTO-004221

TEST YIELDS FROM RAPID FLOW OVEN

TEST CONDUCTED ON 6/28/99 @ UNITHERM

TEST #	PUMP	LBS IN BAG	LBS OUT OF IR	% LOSS	LBS OUT OF OVEN	% LOSS	TOTAL % LOSS
1	34%	13.6	12.94	4.85%	12.58	2.78%	7.50%
1B	34%	13.39	NO IR		12.47		6.87%
2	30%	13.26	12.73	4.00%	12.45	2.20%	6.11%
2B	30%	13.53	NO IR		12.88		4.80%
3	28%	14.25	13.64	4.28%	13.31	2.42%	6.60%
3B	28%	14.01	NO IR		12.9		7.92%

PFF
16.8
17.9
17.1

OVEN TEMP 550°  
 TIME IN OVEN (minutes) 10  
 TIME IN IR (minutes) 1  
 SMOKE SOLUTION 24P 50%  
 MINUTES FROM PEEL TO OUT OF OVEN 18.5

TEST LOT 2 30% PUMP

LBS OUT OF BAG	LBS AFTER IR & OVEN	% LOSS	LBS AFTER BLAST CHILL	% LOSS	TOTAL % LOSS
12.975	12.555	3.24%	12.51	0.36%	3.58%
12.98	12.565	3.20%	12.495	0.56%	3.74%
13.125	12.7	3.24%	12.635	0.51%	3.73%
12.81	12.395	3.24%	12.355	0.32%	3.55%
12.85	12.45	3.11%	12.365	0.68%	3.77%
TOTAL	64.74	62.865	62.38	0.49%	3.68%

PFF 17.9  
 OVEN TEMP 550°  
 TIME IN OVEN (minutes) 10  
 TIME IN IR (minutes) 1  
 SMOKE SOLUTION 24P 50%  
 MINUTES FROM PEEL TO OUT OF OVEN 18.5

TEST LOT 3 28% PUMP

LBS OUT OF BAG	LBS AFTER IR & OVEN	% LOSS	LBS AFTER BLAST CHILL	% LOSS	TOTAL % LOSS
12.83	12.465	3.80%	12.445	0.16%	3.75%
13.37	12.925	3.33%	12.88	0.35%	3.66%
TOTAL	26.3	26.39	25.325	0.26%	3.71%

PFF 17.1  
 OVEN TEMP 550°  
 TIME IN OVEN (minutes) 10  
 TIME IN IR (minutes) 0.75  
 SMOKE SOLUTION 24P 50%  
 MINUTES FROM PEEL TO OUT OF OVEN 18.25

IR REFERS TO INFRARED OVEN

# YIELD SAVINGS

			CURRENT METHOD 48% PICKLE	PROPOSED METHOD 32% PICKLE
\$55.00	20/26 MARKET	CUSHION	1000	1000
\$4.00	GEOGRAPHIC	PICKLE	480	320
\$59.00		BINDER	150	150
\$11.00	CREDITS	DEXTROSE	30	30
\$48.00		HONEY	75	75
47.0%	BONING YIELD			
\$102.13		PUMP %	38.65%	31.97%
\$30.00	CUSHION MARK-UP			
\$132.13				
\$112.31	85% CUSHION @ \$132.13	MEAT COST	\$120.71	\$120.71
\$8.40	15% BINDER @ \$56.00	PUMPED COST	\$87.06	\$91.47
\$120.71	MEAT COST	SHRINK YIELD	78.5%	88.5%
		YMC	\$110.91	\$103.35
		SAVINGS/CWT		\$7.55
		ANNUAL SALES		5,600,000
		ANNUAL SAVINGS		\$42,937

**KRETCHMAR HAM MANNING**  
CURRENT MANNING

5/20/99  
5/20/00

DEFORM		PCS/HR	818
PLACE ON RACK.	1	PCS/MAN/HR	102.2
LAYUP	2	MAN/HRS/100PCS	0.978
DEFORM	2		
WASH FORM	2		
MULE	1		
	8		

128 PCS 9:23:42 MIN = 563.5 SECONDS  
HAMS PER MINUTE 13.6

PEEL		PCS/HR	940.4
LAYUP	1	PCS/MAN/HR	166.1
PEELERS	2	MAN/HRS/100PCS	0.602
HANG	2		
SCALE	0.33		
MULE	0.33		
	5.66		

384 PIECES IN 24.5 MINUTES

15.7 PCS/MIN

PACKAGING - WEST LINE		PCS/HR	903
LAYUP	1	PCS/MAN/HR	129
BAG	1	MAN/HRS/100PCS	0.775
CRY-O-VAC	1		
LABEL	1		
MAKE/PACK BOXES	2		
PALLETIZE	1		
	7		

PCS	TIME (SEC)
20	63
20	79
20	83.5
20	85
20	88
100	398.5

SEC/PC 3.99  
PCS/MIN 15

SUM OF MAN/HRS/100 PCS	20.66	2.355
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PTO-004224

# PRE-COOKED IN THE BAG KRETCHMAR WA HONEY

PRE-COOKED WEIGHT	POST-COOKED WEIGHT	
13.88	14.36	
13.69	13.52	
14.59	13.82	
14.01	13.94	
13.89	14	
14.53	13.8	
13.93	13.34	
14.34	13.59	
14.52	13.79	
13.65	13.71	
14.28	13.65	
14.48	13.35	
14.11	13.76	
14.16	14.08	
14.06	14.48	
13.78	14	
13.63	14.31	
13.99	12.94	
13.91	14.19	
14.2	14.55	
14.09	13.85	
14.03	14.03	
14.06	14.51	
13.83	13.95	
14.09	13.92	
13.95	14.61	
13.97	14.54	
13.76	13.71	
13.82	13.94	
13.75	14.06	
14.47	14.13	
13.92	14.13	
13.71	14.01	
13.92	13.91	
13.85	14.34	
13.99	13.8	
14.35	13.85	
519.19	516.47	99.48%

Aug Ave weight 14.03

13.96

# KRETCHMAR HONEY HAM YIELD STUDY - TEST A

5/11/99

GREEN WEIGHT ESTIMATED
10815

VAT WEIGHTS TO STUFF - 5/11/99			
TICKET #	LBS	ACTUAL LBS*	PIECES
46563	2473	2339	
46564	1780	2292	
46565	2612	1804	
46566	2484	2200	
46567	2382	2273	
46568	2615	2129	
46570	2382	1108	
46571	1607	2354	
PARTIAL		1926	
TOTAL	18315	18223	1248

AVERAGE PIECE WEIGHT	14.6
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TREE WEIGHTS TO SMOKE - 5/12/99			
TREE #	PIECES	PUMP/ STUFF LBS	
1	80	1077	
2	80	1073	
3	80	1094	
4	80	1093	
5	80	1110	
6	80	1096	
7	80	1082	
8	80	1096	
9	80	1078	
10	80	1082	
11	80	1111	
12	80	1117	
13	80	1120	
14	80	1109	
15	80	1082	
16	48	661	
TOTAL	1248	17081	

AVERAGE PIECE WEIGHT	13.7
YIELD TO SMOKE	93.73%

SMOKED WEIGHT TO PACK ~ 5/13/99			
TREE #	PIECES	WEIGHT	
1	80	883	
2	80	874	
3	80	884	
4	80	893	
5	80	909	
6	80	889	
7	80	882	
8	80	898	
9	80	883	
10	80	880	
11	80	900	
12	80	907	
13	80	914	
14	80	902	
15	80	873	
16	48	535	
TOTAL	1248	13906	

AVERAGE PIECE WEIGHT	11.1
YIELD FROM STUFF	76.31%

PACKAGING WEIGHTS	
PIECES	LBS
	6613.4
	316
	6618.4
1PC reheat	11.2
1PC	11.4
1248	13568.4

\*ACTUAL LBS ARE FROM VANILLA TICKET WHICH IS AFTER MESSAGE

TOTAL PACKAGED WEIGHT	13568.4
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AVERAGE PIECE WEIGHT	10.87
----------------------	-------

YIELD FROM STUFF TO PACK	74.46%
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# KRETCHMAR HONEY HAM YIELD STUDY - TEST B

5/17/99

GREEN WEIGHT	VAT WEIGHTS TO STUFF - 5/13/99		
	TICKET #	LBS	ACTUAL LBS* - PIECES
1536	32204	2685	2242
936	32205	1624	1943
1523	32206	2643	2271
1417	32207	2460	2116
1449	32208	2514	2272
1374	32209	2385	885
1410	32210	2446	1294
			1272
			2264
9645	TOTAL	16737	16559
			1180

AVERAGE PIECE WEIGHT	14.0
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\*ACTUAL LBS ARE FROM VANILLA TICKET WHICH IS AFTER MASSAGE

PACKAGING WEIGHTS	
PIECES	LBS
1188	11953.1
12	122.8 estimated weight
1180	12075.9

?  
TOTAL

TREE WEIGHTS TO SMOKE - 5/14/99			PUMP/ STUFF LBS
TREE #	PIECES		
1	80		1058
2	80		1085
3	80		1063
4	80		1066
5	70		924
6	70		923
7	70		938
8	70		938
9	70		939
10	70		951
11	80		1101
12	80		1079
13	80		1072
14	80		1055
15	80		921
16	40		524
TOTAL	1180		15615

AVERAGE PIECE WEIGHT	13.2
YIELD TO SMOKE	94.30%

SMOKED WEIGHT TO PACK - 5/17/99			Estimated weight
TREE #	PIECES	WEIGHT	
1	80	838	
2	80	835	
3	80	831	
4	80	837	
5	70	724	
6	70	725	
7	70	737	
8	70	736	
9	70	753	
10	70	753	
11	80	869	
12	80	840	
13	80	863	
14	80	841	
15	80	730	
16	40	413	
TOTAL	1180	12323	

AVERAGE PIECE WEIGHT	10.4
YIELD FROM STUFF	74.42%

TOTAL PACKAGED WEIGHT	12076.9
AVERAGE PC WEIGHT	10.2
YIELD FROM STUFF TO PACK	72.83%

**MANNING FOR VIRGINIA STYLE HAMS**

**LABOR SAVINGS**

CURRENT	DEFORM		PEELING		PACKAGING		TOTAL
	LAYUP	2	LAYUP	1	LAYUP	1.67	
	DEFORM	2	PEEL	2	BAG	1	
	RACK	1	HANG	2	CRY-O-VAC	1	
	WASH	2	SCALE	0.33	LABEL	1	
	MULE	2	MULE	0.33	MAKE/PACK BOX	2	
					PALLETIZE	1	
		9		5.66		7.67	22.33
PCS/HR		818		940		903	
PCS/MAN/HR		91		166		118	
HRS/100 PCS		1.100		0.602		0.849	2.552

**PROPOSED**

			DEFORM	1	
			PEEL	1	
			BAG & COV	1	
			LABEL & BOX	1	
			MAKE BOX & PALLETIZE	1	
			MULE	1	
				6	6
PCS/HR					384
PCS/MAN/HR					64
HRS/100 PCS					1.563

	PRESENT	PROPOSED
ANNUAL VOLUME (LBS)	5,600,000	5,600,000
PIECE WEIGHT	10.5	11.55
HRS/100/PCS	2.552	1.563
LABOR RATE	\$15.69	\$15.69
TOTAL LABOR COST	\$213,532	\$118,864

20/26 mdt

55.00

+ 4.00 gear

59.00

- 11.00 credits

48.00 ÷ 47% = 102.13

.30 cushion

132.13

132.13 × 85% = 112.31

56.00 × 15% = 8.40

120.71

÷ 139% pump -

= 86.84

÷ 78.50% shrink yk

110.62 4MC

86.84

+ 84.50% shrink yk

102.77 4MC

91.45

÷ 94%

97.28

16% shrink = (7.85)

\$ 440,805

48% pickle

15% binder

3% der loss

7.5% Honey

8% 10,226,930

\$ 574,357

48%

32%

1000

1000

470

320

150

150

30

30

75

75

1735

1575

3/14/00

8290

Smoke drencher belt set at slowest setting

Unit heat at 21.53 Hz	EXIT	ENTRANCE	
	533	648	ACTUAL
	660	650	SET POINT

Exhaust fans off (slow speed)

12 In Rad Cabinet

speed 33 fast Drive Full Power

Steam Cabinet

speed - 4 steam - 1037 valve off

12" nozzle set so steam not coming out  
into room

The other 3 valves were opened approx 2/3.

The thermometer was running at 184, 184, 186

timed press at 5.5/min.

3122 cc: Stuart  
Alan

Les  
Brian

Do NOT deviate from 40°F rule - product,  
is to be below 40°F prior to unthawing.

Chwz

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U-06935

PTO-004241

# T mpRecord for Windows v3.16

## Summary

Data Source : logger  
 Logger Type : multi-trip  
 Serial Number : M0028405  
 Logger Status : logging  
 Sample Period : 00:10:00 (6.0 / hour)  
 Date Printed : Tuesday, March 14, 2000 9:45:33 PM  
 Samples in Logger : 73  
 Started : Tuesday, March 14, 2000 9:38:36 AM  
 First Sample : Tuesday, March 14, 2000 9:38:36 AM  
 Last Sample : Tuesday, March 14, 2000 9:38:36 PM  
 Start with Button : OFF  
 Stop with Button : OFF  
 Start with Switcher : ON  
 Stop with Switcher : ON  
 Allow Markers : OFF  
 Loop Overwrite : OFF  
 Safe Range Entry : OFF  
 Limit Delay : 1  
 Upper Limit : 165.00 F (not exceeded)  
 Lower Limit : 19.99 F (not exceeded)  
 Total Samples : 2,380  
 Total Uses : 31  
 Sensor : standard  
 Logger Version : 2.01  
 Memory : 8k

Item Number: : 8290  
 Stuff Lot: : R&D Test post unithern  
 Cook Lot: : with steam tunnel  
 Date: :  
 Rack Number: :  
 Temp Recorder: : Probe 19  
 Takedown Number: :  
 Oven Number: :  
 :  
 :

## Values in Window (Samples 1 to 73, units = F)

Tuesday, March 14, 2000						
09:38:36	32.99	32.79	32.76	32.76	32.76	32.76
10:38:36	32.76	32.76	32.79	32.79	32.81	32.83
11:38:36	32.85	32.85	33.04	32.95	32.95	38.03
12:38:36	40.41	45.19	50.58	55.38	59.47	62.46
13:38:36	64.72	66.07	66.70	66.90	66.67	66.16
14:38:36	65.37	64.49	63.52	62.47	61.48	60.46
15:38:36	59.34	58.32	57.34	56.41	55.53	54.72
16:38:36	53.91	53.19	52.48	51.75	51.04	50.47
17:38:36	49.84	49.23	48.63	48.07	47.50	46.94
18:38:36	46.42	45.90	45.43	44.98	44.51	44.08
19:38:36	43.68	43.27	42.87	42.53	42.17	41.85
20:38:36	41.52	41.25	40.96	40.69	40.46	40.23
21:38:36	39.83					

*Chilled in Cooler (35°F)  
 Ambient temperature*

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 U-06936**

PTO-004242

# T mpRecord for Wind ws v3.16

## Summary

Data Source : logger  
Logger Type : multi-trip  
Serial Number : M0028413  
Logger Status : logging  
Sample Period : 00:10:00 (6.0 / hour)  
Date Printed : Tuesday, March 14, 2000 9:47:01 PM  
Samples in Logger : 73  
Started : Tuesday, March 14, 2000 9:38:26 AM  
First Sample : Tuesday, March 14, 2000 9:38:26 AM  
Last Sample : Tuesday, March 14, 2000 9:38:26 PM  
Start with Button : OFF Allow Markers : OFF  
Stop with Button : OFF Loop Overwrite : OFF  
Start with Switcher : ON Safe Range Entry : OFF  
Stop with Switcher : ON Limit Delay : 1  
Upper Limit : 129.99 F (not exceeded)  
Lower Limit : 45.00 F (exceeded)  
Total Samples : 4,949 Logger Version : 2.01  
Total Uses : 64 Memory : 8k  
Sensor : standard

Item Number: : 8290  
Stuff Lot: : R & D Pst unitherm  
Cook Lot: : with steam tunnel  
Date: :  
Rack Number: :  
Temp Recorder: : Probe 52  
Takedown Number: :  
Oven Number: :  
:

## Values in Window (Samples 1 to 73, units = F)

Tuesday, March 14, 2000						
09:38:26	32.86	32.74	32.70	32.72	32.76	
10:38:26	32.79	32.81	36.72	39.97	44.40	48.72
11:38:26	52.32	55.04	57.00	58.14	58.64	58.73
12:38:26	58.44	58.05	57.40	56.77	56.07	55.27
13:38:26	54.48	53.73	52.95	52.23	51.51	50.86
14:38:26	50.22	49.55	48.96	48.42	47.84	47.34
15:38:26	46.85	46.36	45.90	45.50	45.16	44.78
16:38:26	44.44	44.10	43.77	43.48	43.16	42.87
17:38:26	42.60	42.31	42.04	41.77	41.47	41.18
18:38:26	40.89	40.62	40.37	40.12	39.87	39.63
19:38:26	39.40	39.18	39.00	38.82	38.64	38.50
20:38:26	38.30	38.16	38.03	37.87	37.76	37.65
21:38:26	37.40					

Chilled in Cooler (35°F)  
Ambient temperature

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U-06937

PTO-004243